

**PATENT APPLICATION TRANSMITTAL LETTER**  
(Small Entity)

Docket No.  
725/72073-2

TO THE ASSISTANT COMMISSIONER FOR PATENTS

Transmitted herewith for filing under 35 U.S.C. 111 and 37 C.F.R. 1.53 is the patent application of:

**Romolo BITELLI**

For: **HEAVY VEHICLE FOR BREAKING UP GROUND WITH RETRACTING AND STEERING REAR WHEELS**

Enclosed are:

- ☐ Certificate of Mailing with Express Mail Mailing Label No.
- ☒ Six (6) sheets of drawings.
- ☒ A certified copy of a **Italian** application.
- ☒ Declaration ☒ Signed. ☐ Unsigned.
- ☒ Power of Attorney
- ☐ Information Disclosure Statement
- ☐ Preliminary Amendment
- ☒ One (1) Verified Statement(s) to Establish Small Entity Status Under 37 C.F.R. 1.9 and 1.27.
- ☐ Other:

jc530 U.S. PTO  
09/531565  
03/20/00

**CLAIMS AS FILED**

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	10	- 20 =	0	x \$9.00	\$0.00
Indep. Claims	1	- 3 =	0	x \$39.00	\$0.00
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>					\$0.00
BASIC FEE					\$345.00
TOTAL FILING FEE					\$345.00

- ☒ A check in the amount of **\$345.00** to cover the filing fee is enclosed.
- ☒ The Commissioner is hereby authorized to charge and credit Deposit Account No. **23-0575** as described below. A duplicate copy of this sheet is enclosed.
  - ☐ Charge the amount of \_\_\_\_\_ as filing fee.
  - ☐ Credit any overpayment.
  - ☒ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
  - ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: **March 20, 2000**

**John P. DeLuca**  
Registration No. **25,505**

Signature

cc:

Applicant or Patentee: Romolo BITELLI

Serial or Patent No.: \_\_\_\_\_

Filed or Issued: \_\_\_\_\_

Title: HEAVY VEHICLE FOR BREAKING UP GROUND WITH RETRACTING AND STEERING REAR WHEELS

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 C.F.R. §1.9(f) AND 1.27 (c)) - SMALL BUSINESS CONCERN

I hereby declare that I am

- ☒ the owner of the small business concern identified below:  
☐ an official of the small business concern empowered to act  
on behalf of the concern identified below:

NAME OF CONCERN: BITELLI SPA

ADDRESS OF CONCERN: VIA IV NOVEMBRE, 2 - 40061 MINERBIO (BO) - ITALY

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 37 C.F.R. §121.3-18, and reproduced in 37 C.F.R. §1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled HEAVY VEHICLE

FOR BREAKING UP GROUND WITH RETRACTING AND STEERING REAR WHEELS

by inventor (s) Romolo BITELLI

described in:

☒ the specification filed herewith

[ ] application serial no. \_\_\_\_\_, filed \_\_\_\_\_

[ ] patent no. \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 C.F.R. §1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d), or a nonprofit organization under 37 C.F.R. §1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. §1.27)

FULL NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

[ ] INDIVIDUAL [ ] SMALL BUSINESS CONCERN [ ] NON PROFIT ORGANIZATION

FULL NAME \_\_\_\_\_

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I acknowledge the duty to file in this application or patent notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. §1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Romolo BITELLI

TITLE OF PERSON OTHER THAN OWNER \_\_\_\_\_

ADDRESS OF PERSON SIGNING VIA JUSSI, 18 - S. LAZZARO (BO) - ITALY

\_\_\_\_\_

~~Pitt~~

DATE July 5, 1999

1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425
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# HEAVY VEHICLE FOR BREAKING UP GROUND WITH RETRACTING AND STEERING REAR WHEELS

## BACKGROUND OF THE INVENTION

5       The invention concerns a heavy vehicle for breaking up ground provided with retracting and steering rear wheels.

It is known that for breaking up ground, specific heavy vehicles are used equipped with wheels or tracks depending on how they are implemented and provided with equipment suited to breaking up the actual ground.

10       Scarifiers are, for instance, known for this purpose that are heavy vehicles used to break up the bituminous surface covering road courses.

A scarifier fundamentally consists of a frame made of heavy-duty metal bodywork, provided with a ripper drum that is set against the ground to be broken up and is supported by a horizontal shaft around which it is rotated.

15       The frame, which is shaped to provide a driver's cab where the operator sits, is in turn supported by a pair of front drive wheels or tracks and a pair of rear wheels or tracks, either with drive or free, the latter being located next to the ripper drum. Traction systems, housed in an engine compartment formed out of the frame, set the ripper drum in rotation to break up the ground and the wheels or tracks to move the machine.

20       The rear wheels or tracks are connected to a sole-plate supported by a hydraulic cylinder that allows a vertical movement to adjust the depth the ripper drum penetrates into the ground while an articulation fixed to the frame and connected to the actual sole-plate allows one or both wheels or tracks to be set in a retracted position inside the frame.

25       The rear wheels or tracks when extracted from the frame, allow better weight distribution primarily during the machine's use, while the possibility of at least one wheel or one track retracting under the frame, allows the machine to be used for digging right up to the wall of the work area.

30       What's more the position of one or more of the rear wheels or tracks when retracted into the side of the machine, allows to reduce the machine's overall dimensions and aid road transport when it is moved from one work site to another. Known machines equipped with one or both rear wheels or tracks retractable are extended manually and therefore by operations that are awkward for the operator since, to carry them out he has to get down from the machine and go to one or  
35       both of its sides to shift the wheels or tracks.

As an alternative to manual retraction, the deposittee of this invention has filed an Italian patent application having protocol number V198U000098 which describes a heavy vehicle for breaking up ground in which the changeover of one or both rear wheels or tracks from extracted to retracted into the frame and vice versa, as well as locking them in their final position, is achieved automatically by controls inside the driver's cab.

One limitation shown by the machine described in the aforementioned patent is that when the rear wheels or tracks are set in their retracted position inside the frame, when turning they scrape the ground with considerable resistance. This problem is particularly accentuated when the machine is fitted with tracks rather than wheels, because in this case the resistance while turning is even higher because of the greater surface area in contact with the ground.

## SUMMARY OF THE INVENTION

This invention sets the scope of eliminating this inconvenience by producing a machine for breaking up ground provided with at least one rear steering wheel or track. An additional scope is that these steering wheels or tracks can also retract into the side of the machine.

Said scopes are achieved by producing a machine for breaking up ground that in accordance with the main claim comprising:

- a frame supported by at least one pair of front wheels or tracks and by at least one pair of rear wheels or tracks;
- at least one driver's cab being part of said frame;
- means of breaking up the ground connected to said frame;
- traction systems supported by said frame to rotate one or more of said wheels or said tracks;

wherein at least one of said rear wheels or said rear tracks has its horizontal axis belonging to a chassis being a integral part of said frame and having at least one first actuator that works with maneuvering systems accessible from said driver's cab to rotate said rear wheel or track around a vertical axis while turning the machine's front wheels.

According to a preferred form of execution the machine is a scarifier mounted on tracks where the two front tracks are both steering and two rear ones, one being fixed and one retractable and steering.

The means of turning the machine include first actuators that work with the rear wheel or track and second actuators that work with both front wheels or tracks, which consist of hydraulic cylinders supplied by slide valves.

In particular the slide valve that operates the steering hydraulic cylinder of the rear track is controlled by solenoid valves, while the slide valve that supplies the hydraulic cylinder for steering the front tracks is controlled directly by the power steering connected to the steering column in the driver's cab. The operation of both hydraulic cylinders is interlinked by means of controls to co-ordinate turning, which include potentiometric position detectors or similar, cooperating mechanically with each hydraulic cylinder and electrically wired to an electronic control unit. This is also electrically wired to the solenoid valves that pilot the slide valves supplying the hydraulic cylinder steering the rear track and a position signal for the rear wheel or track when it is set in its retracted position inside the frame.

An advantage of the scarifier invention is that it is easier to drive above all during turning operations.

Another advantage is that the wear on the tracks is also reduced.

## BRIEF DESCRIPTION OF THE DRAWINGS

The aforesaid scopes and advantages will be better illustrated during the description of a preferred form of execution of the invention that is given as a guideline but not a limitation and refers to the attached diagrams where:

Fig. 1 illustrates a line drawing of the side view of the machine invention;  
Fig. 2 illustrates in an isometric drawing of a detail of the machine in Fig. 1;  
Fig. 3 illustrates an aerial view of the detail in Fig. 2;  
Figures 4 to 6 illustrate line drawings of aerial views of the set-up of the tracks on the machine in Fig. 1 in three different working positions;  
Fig. 7 shows the hydraulic control diagram of the tracks of the machine in Fig. 1 and electrical wiring of the control unit.

## DESCRIPTION OF THE INVENTION

As seen in Fig. 1 the machine invention, generally indicated by 1, is a scarifier suited for breaking up the bituminous surface that covers road courses. The concepts

that will be described below can nevertheless be applied to a machine for breaking up other kinds of terrain.

The scarifier includes a frame 2, supported by a pair of front tracks 3, 3' and by a pair of rear tracks 4, 4', which is shaped to provide a driver's cab generally indicated by 5.

To the rear of the machine and between the rear tracks 4, 4' there is a ripper drum 6 that is rotated around its horizontal axis 6' by traction systems inside the frame 2 and not illustrated here, which by means of gears and mechanisms, again not illustrated here, also rotate one or more of said tracks. It is clear that in different executions the machine invention may be fitted with wheels instead of tracks.

According to the invention at least one of said rear wheels or tracks 4 has its horizontal axis 7 belonging to a chassis 8 being an integral part of said frame 2 and having at least one first actuator 9 that works with maneuvering systems 10 accessible from said driver's cab 5 to rotate said rear wheel or track 4 around a vertical axis 13 while turning the front wheels or tracks 3, 3' of the machine.

In particular the maneuvering systems consist of the machine's steering column 10.

As seen in Fig. 2 and also in Fig. 3 the chassis generally indicated by 8 that support the rear track 4, includes a yoke 12 connected to the track 4, having a vertical pivot journal 13 that is coupled to revolve on a support plate 14 fixed to a second actuator 15 being an integral part of the frame 2.

In detail, as seen in Fig. 4, the second actuator 15 is a second hydraulic jack that has the end of its rod 16 fixed to the plate 14 and the cylinder end 17 where the rod 16 slides, being integral with the frame 2 of the machine.

In particular the cylinder 17, as seen in Fig. 4, is connected to the frame 2 by means of a first articulation generally indicated by 18 and of the type described in the aforementioned Italian patent V198U000098. The first actuation group comprises a four-bar linkage wherein the bars 18a and 18b are moved by hydraulic actuators. This allows the whole chassis 8 to move with the track 4 connected to it, in any one of the directions of the arrow 19 with reference to a fixed point 20 on the frame, to retract the track 4 into frame of the machine as seen in Fig. 1.

With regards to the first actuator generally indicated by 9 and belonging to the chassis 8, it can be seen that it consists of a first hydraulic jack that, as seen in fig.'s 2 and 3, has the rod end 21 hinged to the yoke 12 while the cylinder end 22, where the rod 21 slides, is hinged to the plate 14.



With regards to the front tracks 3, 3' it can be seen in fig. 4 that each of them is supported by a chassis 23, 23' that couples it to revolve on a pivot journal 24, 24' connected vertically to the frame 2.

The front tracks 3, 3' are moreover interlinked by means of a second articulation generally indicated by 25 that is made up of a central rod 26 hinged to a pair of side rods 26', 26'', each of them in turn being hinged to their relative chassis 23, 23' respectively of the front tracks 3, 3'.

It can also be seen that the front track 3 works with a third actuator generally indicated by 27 that consists of a third hydraulic jack having the rod end 28 hinged to the chassis 23 and the cylinder end 29, where the rod 28 slides, hinged to the frame 2 of the machine.

When the rod 28 thrusts in or out of its relative cylinder 29, it forces the chassis 23 to rotate around the vertical axis or pivot journal 24 and by means of the second articulation 25 also transmits this rotation to the front track 3' next to it, making the machine turn.

It can be seen in Fig. 7 that the first and third hydraulic jacks or first actuator 9 and third actuator 27, respectively, are supplied by the pressurized oil distribution circuit generally indicated by 30. This includes a first slide valve 31 piloted by solenoid valves 31' and 31'' that supply the first hydraulic jack 9 and by a third slide valve 32 that is controlled by the steering column or maneuvering system 10 of the machine, which supplies the third hydraulic jack or third actuator 27.

The distribution circuit also includes a first position detector 33 of the first hydraulic jack 9 and a third position detector 34 of the third hydraulic jack 27 that consist of potentiometric position detectors or similar, connected to an electronic control unit 35 for the coordinated control of the turning angles of the front tracks 3, 3' and the rear track 4.

It can be seen that there is also a position signal 36 preferably consisting of a travel switch that detects the retracted position of the rear track 4.

The travel switch 36 together with the potentiometric detectors 33, 34' and the solenoid valves 31', 31'', are electrically wired to the electronic control unit 35 that coordinates their operation, controlling the turn.

A pump 37 completes the circuit.

It works so that when the machine's traction systems are operating, adjusting the steering column or maneuvering system 10 by turning it in any of the directions indicated by the arrow 40, pressure is applied to the third actuator or hydraulic jack 27

that turns the front tracks 3, 3', for instance making them turn counterclockwise 38 as illustrated in Fig. 6 around a pivot center 39.

The third position detector 34 transmits the signal to the electronic control unit 35, which operates the solenoid valve 31' or 31" of the first actuator or hydraulic jack 9, causing a rotation also for the track 4 according to a calculated geometry in the same counterclockwise direction 38 around the same pivot center 39.

The third position detector 34 keeps control of how the turn is progressing by sending signals to the electronic control unit 35.

The position signal 36 detects when the rear track 4 is in its retracted position inside the frame that can be seen in Fig. 6.

It is nevertheless clear that the rear track 4 can also be turned when it is in its extracted position.

The track 4 is set in its retracted position inside the frame and then is reset in the extracted position that can be seen in Fig. 4 by acting from inside the driver's cab by means of control systems of the first articulation 18, that has not been illustrated, that is thereby made to turn in any of the directions of the arrow 19 and whose operation is illustrated in the aforementioned Italian patent V198U000098.

The above description amply shows that the machine invention achieves all the set scopes.

In a different form of execution, the machine invention may have both rear tracks steering.

In the execution phase, the machine invention may undergo changes or variations in construction all falling under the protection of the main claim that shall therefore all be considered protected by this patent.

## CLAIMS

What is claimed is:

5

1. A steerable machine for breaking up ground comprising:  
a frame;

at least one pair of rollable front supports and at least one pair of rollable rear supports, each of said front and rear supports including a chassis secured to the frame and said front supports being rotatable about a front vertical axis and at least one of the rear supports being pivotable about a rear vertical axis;

at least one driver's cab located in said frame;

a means for breaking up the ground connected to said frame;

traction means supported by said frame for rotating at least one of said rotatable supports;

at least one first actuator operatively coupled to the rear supports;

a maneuvering system accessible from said driver's cab for operating the actuator for rotating said rear supports about the rear vertical axis while turning the front supports of the machine.

20

2. The machine according to claim 1, wherein:

said chassis includes a yoke that supports said rear support, and has a vertical pivot journal coupled to revolve on a support plate fixed to an end of a second actuator integral with said frame.

25

3. The machine according to claim 2, wherein:

said first actuator comprises a first hydraulic jack having a first rod end fixed to said yoke and a first cylinder end,

wherein said rod slides, fixed to said plate.

30

4. The machine according to claim 2, wherein:

said second actuator comprises a second hydraulic jack set with a vertical axis, which has a second rod end fixed to said plate and a second cylinder end,

wherein said rod slides, integral with said frame.

35

5. The machine according to claim 4, wherein:

the cylinder of said second hydraulic jack is an integral part of said frame being connected thereto by means of a first articulation for moving said chassis with respect to a fixed point on said frame in order to move the rotatable support inward of said frame.

5

6. The machine according to claim 1, wherein:  
the chassis of said front supports are interlinked by means of a second articulation, at least one of said chassis cooperating with a third actuator for rotating the chassis around a vertical axis.

10

7. The machine according to claim 6, wherein:  
said third actuator comprises a third hydraulic having a third rod end pivoted to said chassis of said front support and a third cylinder end,  
wherein said rod slides, pivoted on said frame.

15

8. The machine according to claim 2, wherein:  
said jacks comprise hydraulic two-way jacks connected to a distribution circuit of oil under pressure.

20

9. The machine according to claim 8, wherein:  
said distribution circuit comprises:  
a first slide valve piloted by solenoid valves that supply said first hydraulic jack;  
a third slide valve controlled by said maneuvering system of said machine  
that supply said third hydraulic jack;  
a first position detector cooperating with said first hydraulic jack;  
a third position detector cooperating with said third hydraulic jack;  
a position signal of said rear wheel or track;  
an electronic control unit electrically coupled to said position detectors, to said  
position signal and to said solenoid valves of said first slide valve.

30

10. The machine according to claim 9, wherein:  
said position detectors comprise potentiometric detectors.

## ABSTRACT

5        A machine for breaking up ground including, a frame supported by at least one  
pair of front wheels or tracks and by at least one pair of rear wheels or tracks. A  
driver's cab is made out of said frame and a means of breaking up the ground is  
connected to the frame. A traction system is supported by the frame and is for rotating  
one or more of the wheels or tracks. At least one rear wheel or track has a horizontal  
10    axis belonging to a chassis that is integral with said frame. The chassis is provided  
with at least one first actuator that works with maneuvering systems accessible from  
the driver's cab to rotate the rear wheel or track around a vertical axis while turning the  
front wheels or tracks of the machine.

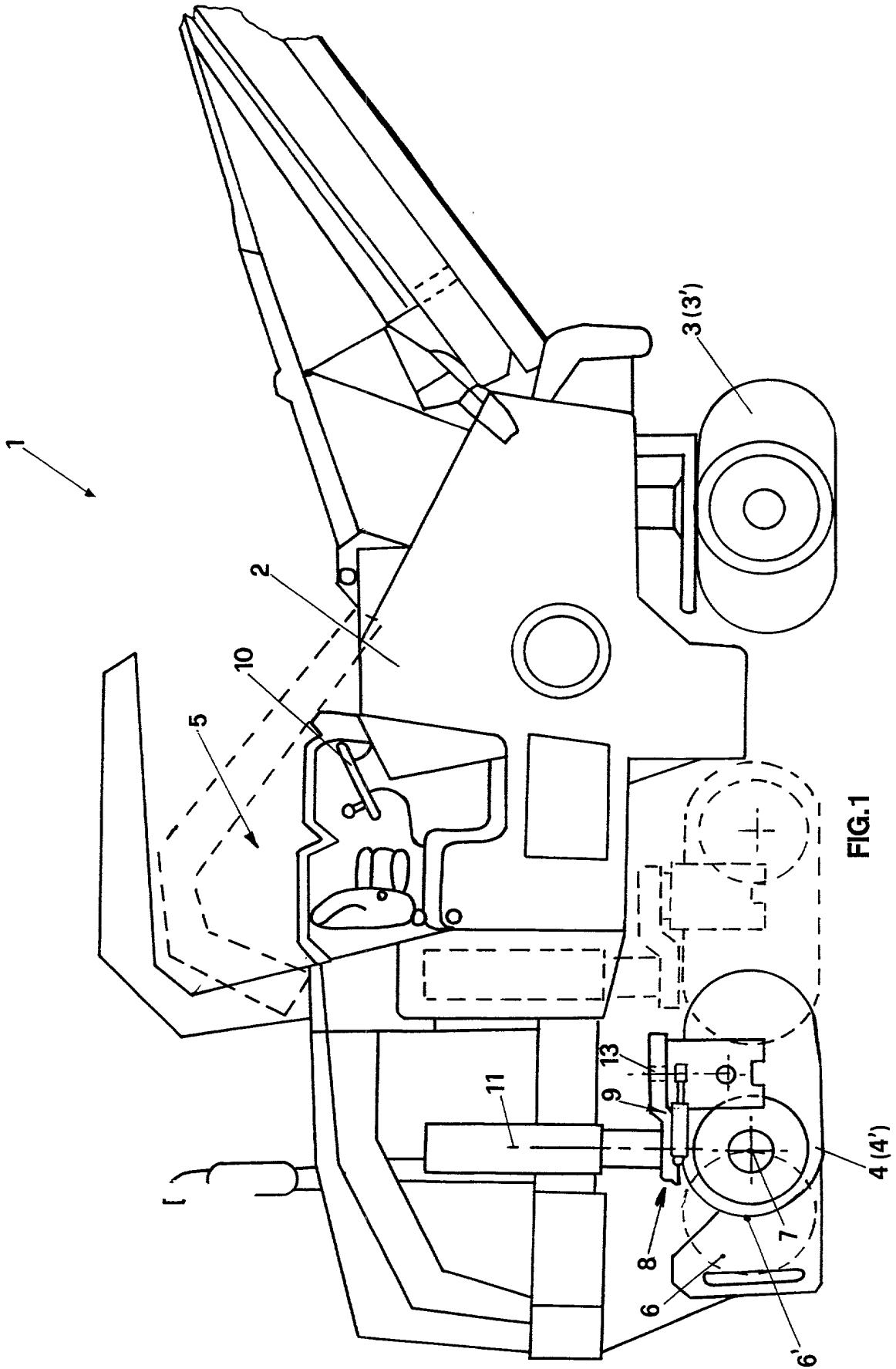


FIG.1

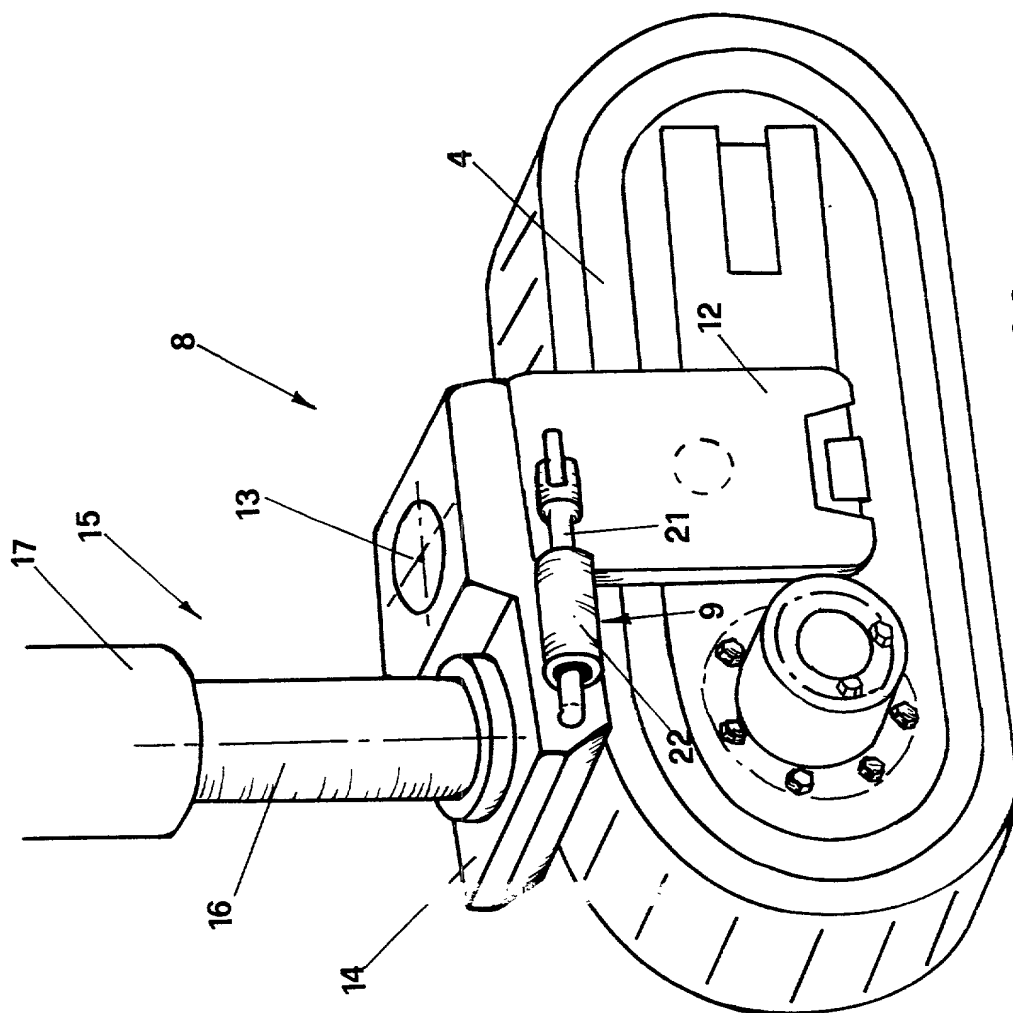


FIG. 2

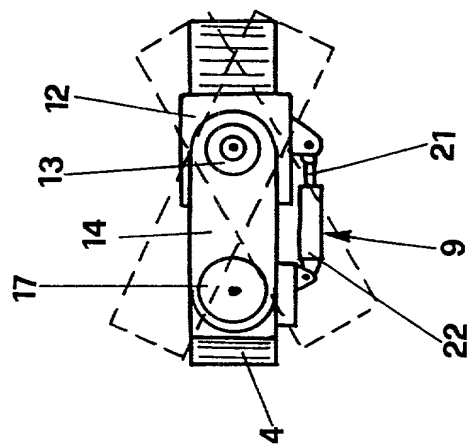
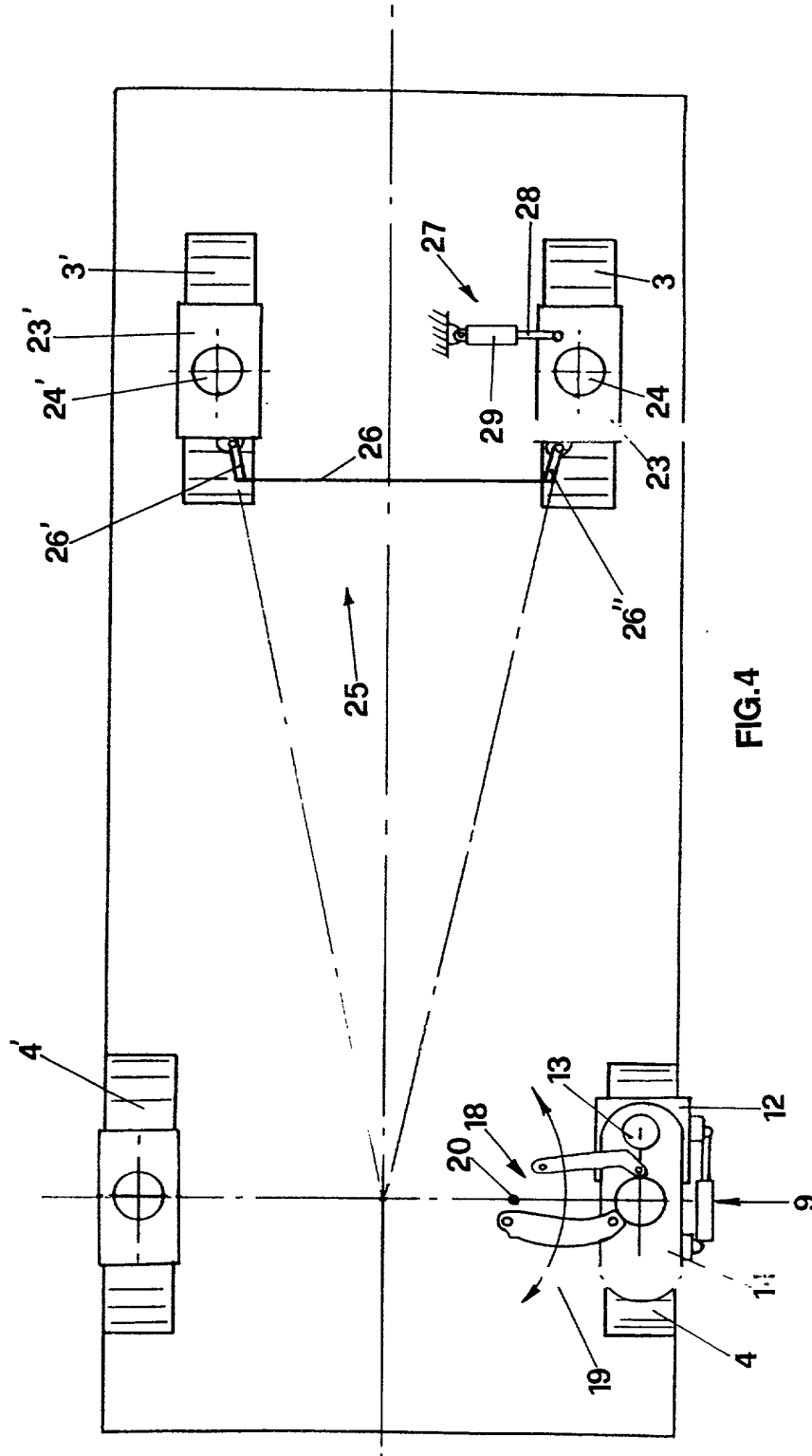


FIG. 3







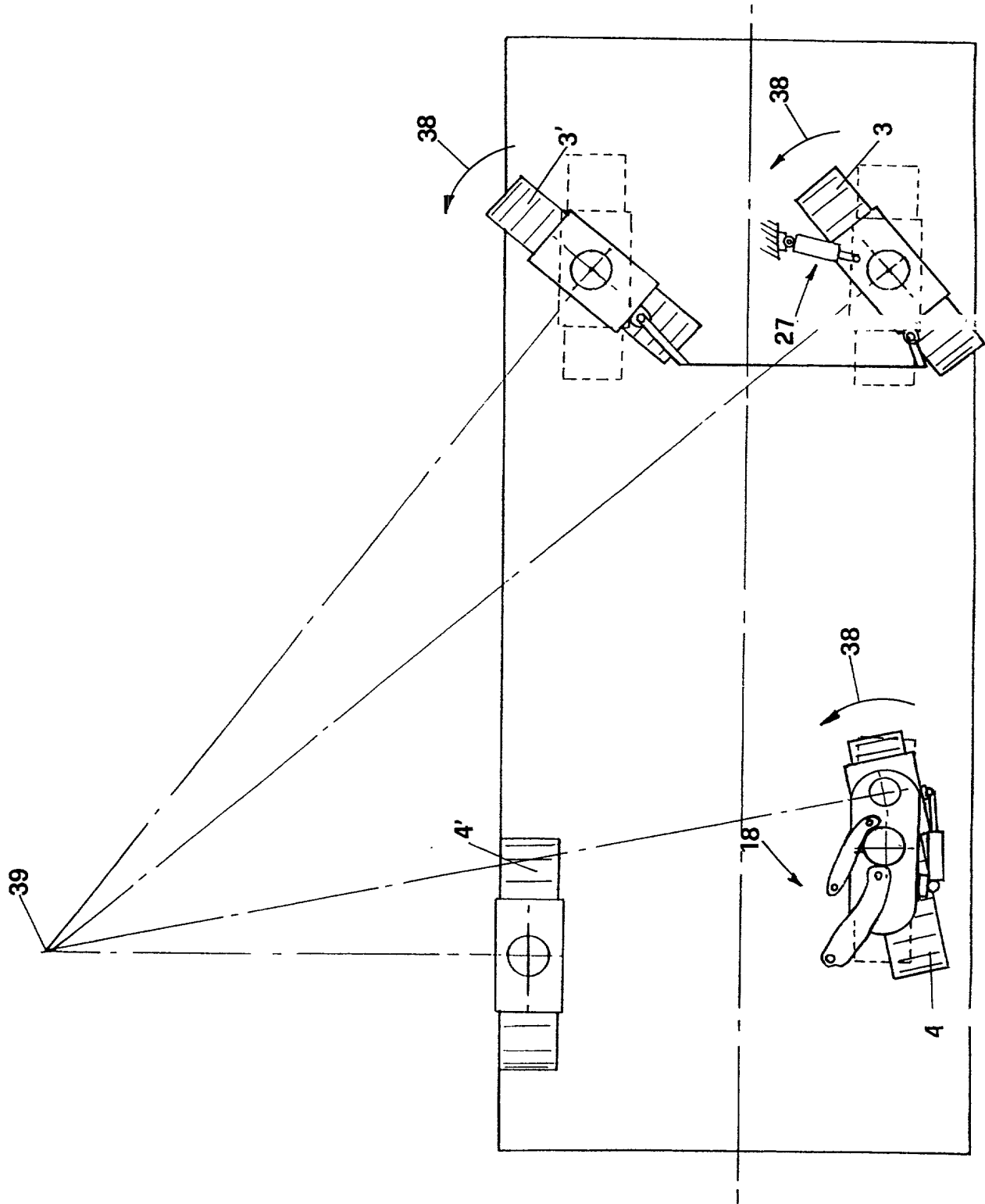
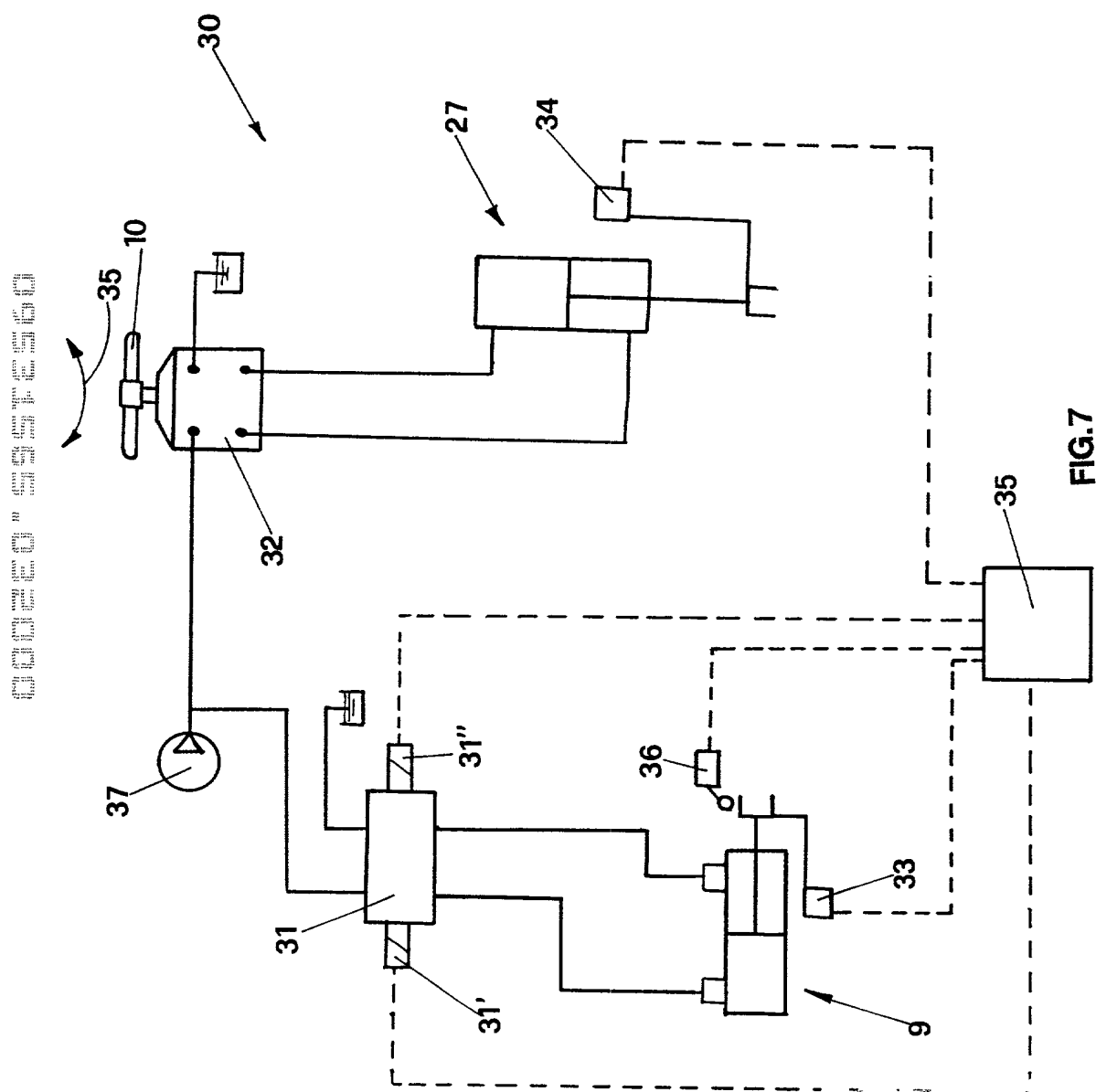


FIG. 6



**COMBINED DECLARATION AND POWER OF ATTORNEY  
FOR UTILITY PATENT APPLICATION (Includes PCT)**

Attorney Docket No.  
725/72073-2

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name; that

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

HEAVY VEHICLE FOR BREAKING UP GROUND WITH RETRACTING AND STEERING REAR WHEELS

the specification of which (check one): ☒ is attached hereto.

☐ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_.

☐ was filed as PCT international application no. \_\_\_\_\_ on \_\_\_\_\_, and was amended under PCT Article 19 on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

VI99A000056 (Number)	ITALY (Country)	MARCH 23, 1999 Day/Month/Year Filed	YES <input checked="" type="checkbox"/>	<input type="checkbox"/>	Yes	No
_____ (Number)	_____ (Country)	_____ Day/Month/Year Filed	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No
_____ (Number)	_____ (Country)	_____ Day/Month/Year Filed	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No

I hereby claim the benefit under Title 35, United States Code, §119 (e) of any United States provisional application(s) listed below:

Application No. _____	Day/Month/Year Filed _____	Application No. _____	Day/Month/Year Filed _____
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I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

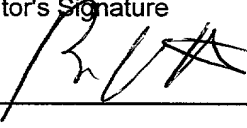
Application Serial No. \_\_\_\_\_ Filing Date \_\_\_\_\_ Status (patented, pending, abandoned) \_\_\_\_\_

Application Serial No. \_\_\_\_\_ Filing Date \_\_\_\_\_ Status (patented, pending, abandoned) \_\_\_\_\_

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith; Watson Cole Grindle Watson, P.L.L.C.; Lawrence R. Radanovic, Reg. No. 23,077; Richard H. Tushin, Reg. No. 27,297; Donald N. Huff, Reg. No. 27,561; John P. DeLuca, Reg. No. 25,505; Robert J. Lasker, Reg. No. 22,785; Walter D. Ames, Reg. No. 17,913 and Roy W. Butrum, Reg. No. 18,290. Direct all telephone calls to telephone no. **(202) 628-3600** and faxes to **(202) 628-3650**.

Address all correspondence to **Watson Cole Grindle Watson, P.L.L.C., 10th Floor, 1400 K Street, N.W., Washington, D.C. 20005-2477.**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Residence:		Citizenship
Post Office Address:		
Full Name of Third, Joint Inventor	Inventor's Signature	Date
Residence:		Citizenship
Post Office Address:		